# HISTORY AND STATUS OF THE FRANKLIN'S GULL ON MALHEUR NATIONAL WILDLIFE REFUGE, OREGON

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ABSTRACT.— Franklin's Gulls first arrived in southeast Oregon in 1943, but the first nest was not located until 1948. From 1949 to 1964 gull numbers showed annual fluctuations. An increase began in 1965 and continued through 1980. By 1980 an estimated 2500 Franklin's Gulls were nesting on Malheur National Wildlife Refuge, Harney County, Oregon. The species arrives in April and nesting begins by 1 June. Average nest and egg measurements were similar to those from other areas within the species range.

The present breeding distribution of the Franklin's Gull (*Larus pipixcan*) is from southeast Alberta, central and southern Saskatchewan, and southwestern Manitoba; south to central-eastern Oregon, south-central Montana, northwest Utah, eastern North Dakota, northeastern South Dakota, southwestern Minnesota and northwestern Iowa (AOU Check-list 1957). Malheur National Wildlife Refuge (NWR), Harney County, Oregon, is the western extremity of the species' breeding range.

The Franklin's Gull was first observed in southeastern Oregon in 1943, about the same time the species appeared in Idaho. Burleigh (1972) reported that until 1941 the species was only a straggler in southern Idaho, but is now a local summer resident.

The range extension is further illustrated by the gulls' distribution given in the 1931 AOU Check-list. The check-list recorded the species as a breeding bird in the prairie regions of interior North America across its present range, but was not listed as a straggler in Oregon or Idaho.

The history of Franklin's Gulls in south-central Oregon with limited data on its breeding biology, is presented here.

## STUDY AREA

Malheur NWR is in the southern part of the Malheur-Harney Lakes Basin, about 40 km south of Burns, Oregon, in the northern extremity of the Great Basin (Fig. 1). The refuge consists of about 73,655 ha of large lakes, alkali flats, wet meadows, extensive freshwater marshes and sagebrush uplands. The climate is semiarid and water is supplied from direct precipitation and runoff from the surrounding watersheds via the Blitzen and Silvies rivers, and Silver Creek.

For Franklin's Gulls, the most important part of the refuge is Malheur Lake. The lake is one of the largest freshwater marshes in the United States. According to refuge files, the size of the marsh varies from year to year, and during the past 45 years has averaged about 18,200 ha, ranging from a low of 200 ha (1961) to 27,125 ha (1980). Water rarely exceeds 2 m in depth. Hardstem bulrush (*Scirpus acutus*) is the dominant emergent plant, but along the lake's periphery, broad-fruited burreed (*Sparganium euryocarpum*) and baltic rush (*Juncus balticus*) are locally abundant (Duebbert 1969).

Franklin's Gulls feed in the meadows that surround the lake, and use the deeper water of the lake for nesting. Limited feeding also occurs in the surrounding uplands and plowed fields in June and July, when grasshoppers are abundant.

## HISTORY

Oregon's first recorded Franklin's Gull was seen at Malheur NWR on 24 April 1943 (refuge files). It is unknown to us why the species invaded southeast Oregon. Agricultural development, such as cereal grains, row crops, and alfalfa, along the Snake River in southern Idaho could have facilitated this invasion.

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Fig. 1. Malheur National Wildlife Refuge, Oregon, in relation to the Great Basin.

Franklin's Gulls, like some other gulls, are well adapted to agricultural developments and tend to seek newly plowed fields, where they feed on invertebrates exposed by farm machinery. This association with human activity could have allowed the species to move westward from its nearest known nesting colony in northern Utah (AOU Check-list 1931).

The species was regularly seen on Malheur NWR during the breeding season after 1943 and was believed nesting in 1947. The first nest was not located until 7 June 1948. This floating nest contained three eggs and was composed of hardstem bulrush. The water depth was 1.2 m and about six other Franklin's Gull pairs were circling over the area.

From 1949 through 1961, Franklin's Gull numbers showed annual fluctuations that appeared to be strongly associated with the productivity of Malheur Lake (Table 1). Only 30 to 40 individual gulls nested on the refuge from 1949 through 1951, but in 1952 their numbers increased to 250. The lake dropped after 1952, reaching a low point of 14,570 ha in 1955. The number of gulls likewise decreased during this period. By the fall of 1955 Franklin's Gulls numbers had dropped to 80 individuals. Also, during this period the introduced carp (*Cyprinus carpio*) had increased to such great numbers that in the fall of 1955 the lake was chemically treated to reduce their population. The spraying of the lake with rotenone resulted in an estimated kill of 1.5 million carp.

TABLE 1. Individual Franklin's Gull numbers on Malheur National Wildlife Refuge, Oregon.

| Year | Estimated number | Year | Estimated number |
|---|---|---|---|
| 1949 | 40 | 1965 | 500 |
| 1950 | 40 | 1966 | 500 |
| 1951 | 30 | 1967 | 500 |
| 1952 | 250 | *1968 | 700 |
| 1953 | 100 | 1969 | 550 |
| 1954 | 100 | 1970 | 1000 |
| *1955 | 80 | 1971 | 1200 |
| 1956 | 300 | 1972 | 1000 |
| 1957 | 100 | 1973 | 2000 |
| 1958 | 50 | 1974 | 2000 |
| 1959 | 100 | 1975 | 0 |
| 1960 | 50 | 1976 | 400 |
| *1961 | 10 | *1977 | 500 |
| 1962 | 150 | 1978 | 850 |
| 1963 | 150 | 1979 | 2200 |
| 1964 | 150 | 1980 | 2500 |

*Years of chemical treatment for carp in Malheur Lake.

Above normal runoff in 1956 increased the lake size to 22,600 ha and submergent plants returned and grew to cover 6070 ha. Gulls likewise responded to this increase and 300 individuals nested in 1956. High lake levels (26,710 ha) were also reported in both 1957 and 1958, but for undetermined reasons numbers declined to 100 and 50 gulls, respectively.

Drought conditions began in 1959 (driest year since 1934) and continued through 1961 when the lake reached the lowest level it had been in 25 years. By the fall of 1961 only 200 ha of water remained and carp were again chemically treated, resulting in an estimated kill of 150,000 carp. In 1961, only 10 Franklin's Gulls were present in the nesting colony. Gulls began to increase in 1962, with 150 individuals nesting in Malheur Lake. They increased to record levels from 1965 through 1968, with 700 individuals nesting in 1968. By 1970 the nesting population reached 1000 individuals for the first time. From 1970 through 1974 the estimated nesting population ranged from 1000 to 2000 individuals.

In 1975, the species arrived on schedule and remained in the Malheur-Harney Lake Basin throughout the nesting season. By late May there were an estimated 2130 gulls in the basin, but only 50 on Malheur Lake. Most of the birds remained in the irrigated meadows south and east of Burns. They did not nest in Malheur Lake in 1975, although there was a small colony located off the refuge about 8 km northwest of the former lake colony. A possible explanation for the lack of Franklin's Gulls nesting on Malheur Lake in 1975 was carp populations had greatly reduced the aquatic invertebrate populations by reducing the aquatic plant production. Gulls probably did not attempt to nest, be cause invertebrates are the principal food for nesting Franklin's Gulls.

Although the lake was still overpopulated with carp in 1976, about 400 gulls nested and in 1977 500 nested; in 1977, however, no nests were successful. The lake was in a relatively unproductive state with high carp populations, low lake levels (6100 ha), and only 816 ha of submergent vegetation. Carp control was subsequently accomplished in the fall of 1977, resulting in an estimated kill of

3.5 million carp. Conditions improved in 1978, when 850 gulls successfully nested, increasing to 2500 in 1980.

## BREEDING BIOLOGY

The Franklin's Gull mean arrival date in southeastern Oregon is 23 April, with the earliest record being 11 April 1970. The species is usually seen first at Malheur Lake on potential nesting sites, or adjacent to the lake near Malheur NWR headquarters. If the lake is in poor condition, with high carp populations, or low lake levels, gulls may first appear in the irrigated meadows south and east of Burns.

The majority of breeding gulls have arrived in the basin by 10 May and have begun to nest by 1 June. The species usually nests in scattered stands of bulrush, avoiding dense stands. Bulrush density has varied from year to year in Malheur Lake, and this has contributed to shifts in colony sites. Burger (1974) reported that nesting Franklin's Gulls in northwest Minnesota also avoided dense emergent growth.

On 14 and 16 June 1969, E. L. McLaury and C. D. Littlefield examined 51 nests in a large gull colony in the central part of the lake. The nests consisted of mounds of dried bulrush over 76 cm of water. Average nest measurements were as follows: nest height 18 cm, basal diameter 86 cm, crown diameter 23 cm, bowl diameter 16 cm, and bowl depth 4.3 cm. A total of 100 eggs was measured and averaged 51.3 × 36.3 mm (range 46.5–55.6 mm; 34.2–37.8 mm). Our data on egg measurements is similar to that reported by Roberts (1900), Gauy (1968), and Burger (1973). On 27 May and 9 June 1980, 10 nests were examined by S. P. Thompson and J. E. Cornely. These nests were over 169 cm of water. Average nest measurements were as follows: nest height 17 cm, basal diameter 63 cm, crown diameter 21 cm, bowl diameter 15 cm, and bowl depth 6.3 cm.

Nesting success at Malheur NWR was determined for 48 nests in 1969. Any nest that had at least one egg that hatched was considered successful. Of these, 45 were successful (93.7 percent), and 3 were unsuccessful (6.3 percent).

## CONCLUSIONS

Franklin's Gulls became established on Malheur NWR in the late 1940s. At present the species is well established in southeast Oregon. Its status should remain the same unless Malheur Lake becomes unproductive for a sustained period.

Carp, which were introduced into the basin in the early 1920s, have decreased productivity of the lake since the early 1950s. Chemical application of rotenone in 1955, 1961, 1968, and 1977 resulted in large numbers of carp being killed. Usually within five years carp populations have become reestablished. In years when carp numbers were high, numbers of nesting Franklin's Gulls usually declined. Adults feed in the surrounding meadows, but little food is available near the colonies. As young approach fledging, the adults spend less time with them (Burger 1974) and food becomes a limiting factor.

Presently, the local population of gulls is increasing, but as chemical prices continue to spiral upward, carp control could become an impossibility. Such a situation could affect the Franklin's Gull population on the refuge and in southeast Oregon.

## ACKNOWLEDGMENTS

We thank John Cornely, Brad Ehlers, Joseph Mazzoni, and Caryn Talbot for reviewing the manuscript, and Ruth Warneke for typing assistance. Further, we would especially like to thank Eldon McLaury, who stimulated interest in conducting field work on the Franklin's Gull at Malheur NWR.

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